

Missouri Assessment Program  
Spring 2001

Science

Released Items  
Grade 7

**7** Mary noticed rust spots beginning to form on her bicycle fender on areas where the paint had come off.

What chemical change had occurred? Be sure to name two specific elements involved in this change.

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Why did this change occur only where the paint had come off the fender?

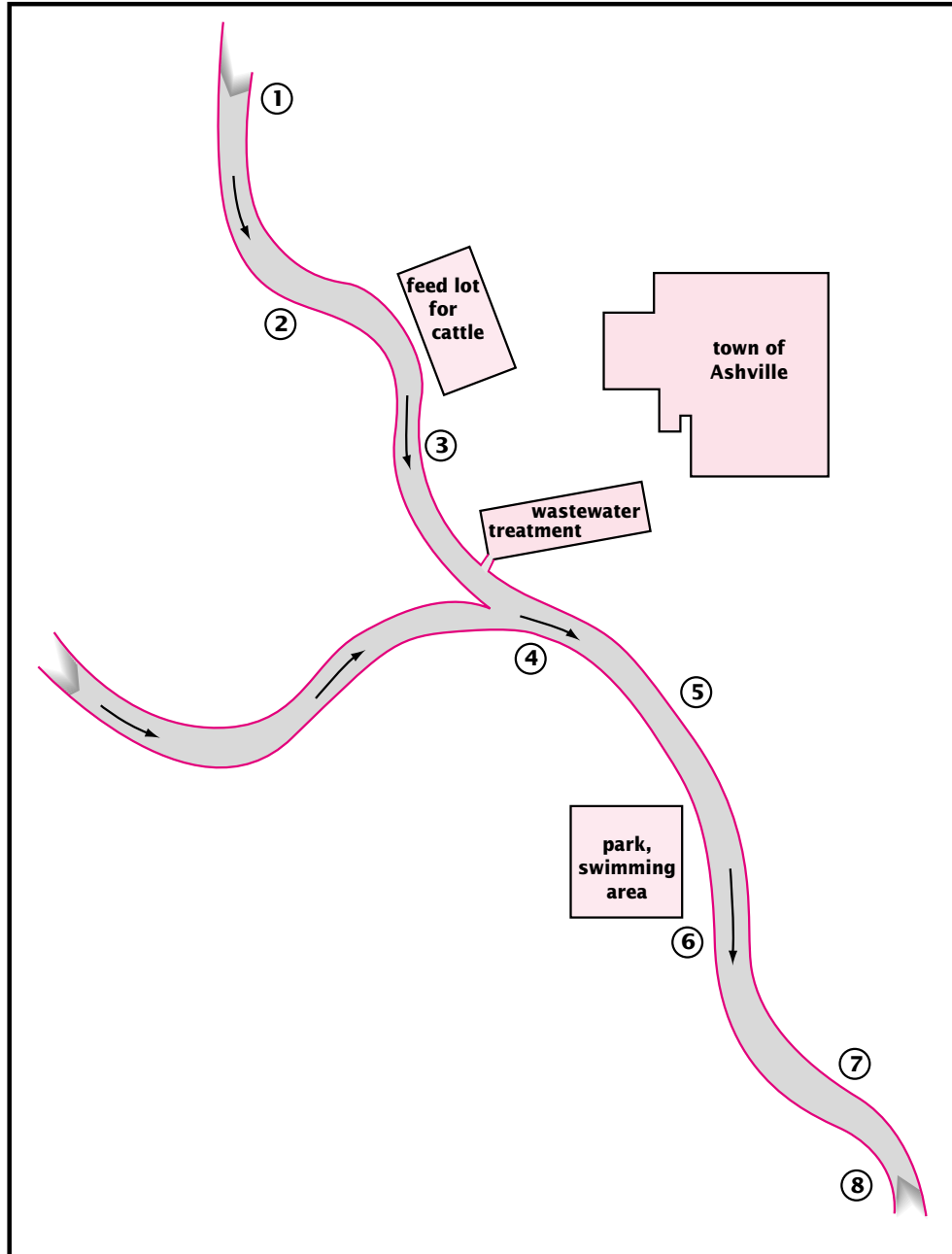
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## Stream

The river shown below is used for swimming, fishing, boating, and other recreational purposes. The County Parks Association has conducted research and gathered data as displayed in the charts on the next page. Study the charts to help you answer the questions on Pages 7 and 8.



**Chart 1:**  
**Maximum levels of bacteria considered safe**  
**for water-related human activities.**

Human Activity	Allowable Levels of Bacteria in 100 mL of Water
Drinking	less than 1
Swimming	less than 200
Boating	less than 1000
Avoid any contact with skin	more than 1000

**Chart 2:**  
**Kinds of fish that can survive in varying levels of dissolved oxygen.**

Dissolved Oxygen Levels in mg per Liter of Water	Kind of Fish
8 and above	pike, trout, bass, sunfish, catfish, carp
5 to 7	bass, sunfish, catfish, carp
2 to 4	catfish, carp
1 and below	none

**Chart 3:**  
**Eight research sites along the river and data collected at each site.**

Research Site	Water Temperature in °C	Bacteria Levels in 100 mL of Water	Dissolved Oxygen Levels in mg/L
1	25	70	8
2	25	75	8
3	25	1500	1
4	25	750	3
5	25	300	5
6	25	150	6
7	25	80	8
8	25	70	8

- 4 At which research site is the river most unhealthy for living things? Why do you think so? Use the map and charts to support your answer.

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- 5 Based on Chart 3, what happens to dissolved oxygen levels as bacteria levels in water increase?

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- 6 The fishermen are concerned about the absence of trout in the river near Research Site 4. Use the information from Chart 2 to explain why trout are not present in this part of the river. Also explain the role played by the level of bacteria at Site 4 in making the area uninhabitable for trout.

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**7** Many children swimming in the river near Research Site 6 have become ill from unknown causes. There is a rumor that the sickness is related to the location of the wastewater treatment plant. You have concluded that the wastewater treatment plant is not related to the cause of the illness. Using information from the map and charts, give two reasons for your conclusion.

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_

**8** Recommend a site for a new recreational county park where safer swimming, boating, and fishing could take place. What information from all three charts did you use to support your decision?

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## Part 2

- 26** Explain in detail what causes summer and winter in Missouri. You may draw a diagram of Earth and the sun to help with your explanation, but a diagram is not required.

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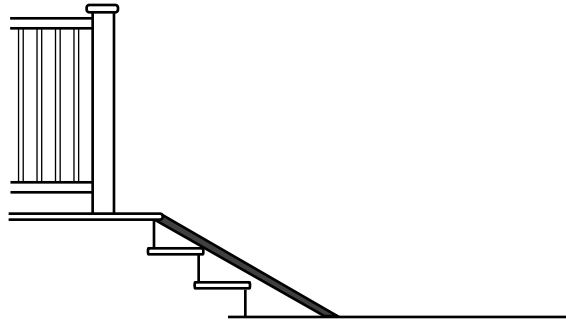
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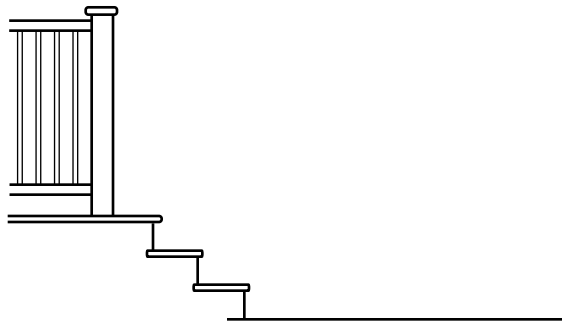


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Mr. Jones uses a wheelchair ramp to propel his wheelchair from the sidewalk up to his porch. Look at the picture of the ramp.



On the diagram below, draw a picture of another ramp that would make it easier for Mr. Jones to propel his wheelchair from the sidewalk to the porch.



Explain why this ramp would be easier for Mr. Jones to use.

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Would the ramp you drew reduce the amount of work needed to propel the wheelchair from the sidewalk to the porch? Explain your answer.

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